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and to the Betterment of
Outdoor Recreation in Virginia*

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COVER: The ferocious northern pike, big cousin of our native pickerel, may soon provide new fishing thrills for Virginia anglers. There is more about experimental rearing and stocking of pike and muskellunge on page 9. Painting by Daniel Ankudovich, West Hazleton, Pennsylvania.

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EDITORIAL

A Matter of Truth

LAST June in this column, under the heading "A Matter of Right," we registered a contrary opinion with respect to an antifiarm bill (S-1592) pending before the United States Senate, and were promptly taken to task for so doing by no less an authority than *The Washington Post*.

In itself this rebuke was hardly a surprise. We already had commented on the strangely biased position of some segments of the nation's press, and the Washington newspaper's June 22 editorial entitled "Conspiracy?" amply confirmed that observation. Nor were we unduly upset to find ourselves accused of indulging in an "interesting flight of fancy" when we referred to the antifiarm crusade as a conspiracy to disarm the law-abiding American public. After all, this could be a matter of opinion, depending perhaps upon what one reads into the term "conspiracy," and upon how much one thinks he knows about the real motives and tactics of some of the people who advocate stringent firearms restrictions.

What did surprise us, however, was *The Washington Post* editorial writer's misstatement of relevant facts, especially since he took it upon himself to cast the first stone.

"The proposal," we had said, "would abolish mail order sales, and restrict even over-the-counter purchases, of shotguns and rifles. But that is only the beginning, for S-1592 would hand over to the Secretary of the Treasury full authority without restraint to prescribe further antifiarm regulations."

No! "S-1592 is designed *simply to control* the mail order sales of guns—to help the states protect themselves against the unchecked flood of mail-order weapons to *persons ineligible to receive them under state laws*," thundered *The Post*.

Now this is a matter of fact, not of opinion, and a responsible newspaper ought to stick to the truth in its editorializing as well as in its news reporting.

S-1592 was NOT designed *simply to control* mail order sales of guns to certain irresponsible persons. S-1592 would *prohibit* mail order sales of firearms, restrict over-the-counter purchases of arms and ammunition, and give to the Secretary of the Treasury the *authority to prescribe additional harsh federal antifiarm regulations*—just as we previously said it would do. Some people may see merit in such provisions. We do not. But the point is that no matter how strongly one may favor the restricting—or even the prohibition—of firearms sales, whoever tries to pass off any such legislation as S-1592 as merely an effort to help keep mail order weapons out of the hands of irresponsible persons either does not have the facts or else intentionally misrepresents them.

We are not categorically opposed to any and all firearms regulations. There are some good ones already on the books, and they could stand some strengthening. But S-1592 and its House counterparts are bad bills that deserve nothing better than early and ignominious defeat.—J. F. Mc.

LETTERS

Concealed Weapons

NOW that the Game Commission will allow one to hunt with a pistol, it would be nice if you could publish an article on how to carry a pistol so that a hunter will not run afoul of the general laws on concealed weapons. What is a concealed weapon? Do I have to carry my pistol in my hand? Is it classed as concealed if I have it under my hunting coat, even if it is in a holster?

John G. Lyons
Richmond

It was not the Game Commission but the General Assembly who amended the game laws to permit hunting, with certain very important limitations, with handguns. Nothing that has to do with the prohibition of carrying concealed weapons has been modified. A hunter may carry a pistol in his hand, just as he would carry a shotgun or rifle, or he may carry his weapon in a visible holster worn on the outside of his clothing. If he puts a handgun in his pocket or in a holster worn under an outer garment, the weapon is concealed and therefore illegal.—Ed.

Oppose Rappahannock Dam

I READ the article "The Rappahannock Above Tidewater" in the June issue of *Virginia Wildlife* and I too would like to speak out for the preservation of this wonderful river.

I have fished, canoed, camped and swum along the Rappahannock, and my love for it is strong. The area abounds in history and it is evident everywhere. It would be a shame to flood our heritage.

As for the river itself, the Rappahannock is one of the most beautiful in the East. There is little evidence of pollution or other man-made spoilage and its waters run free and clear. In the spring canoeing and fishing is the order of the day, and the Rappahannock is one of the finest bass fishing streams in Virginia; it also has some very scrappy sunfish.

I think the reasons for a dam above Fredericksburg are not sufficient to warrant impounding the waters of this wonderful stream. This dam would destroy more than it would create, so I say, preserve the Rappahannock!

Paul A. Kerr
Alexandria

THOSE of us who love the wild and beautiful rivers and forests owe a debt of gratitude to Randy Carter for his tireless and intelligent fight to save the Rappahannock River above the falls at Fredericksburg.

The Army Engineers have said the recreational value of the lake which would be created above the proposed Salem Church Dam is the controlling factor which would make this project economically feasible. The vast majority of outdoorsmen and sportsmen, I am sure, know the river as God gave it to us furnishes much more varied, exciting and wholesome recreation than any big artificial lake.

Tom Jones
Warrenton

Start 'em Young

By HENRY H. GRAHAM
Twin Falls, Idaho

A DEEP and profound love of hunting and fishing and the outdoors in general is great boy insurance. The youth who likes to shoot a gun and wet a line gets into trouble far less often than one who does not. They are fine, clean sports, and healthful diversions too, for everyone is benefited by exercise and invigorating open air.

A father can hardly start too early in developing in his son a love of the outdoors. A boy can go wildfowling and big game hunting with his dad long before he himself is old enough to carry a gun in the field. And he can begin fishing when he is still something of a toddler. I started accompanying my father on such trips when I was no more than six or seven years old. Much of his vibrant enthusiasm rubbed off on me, and I longed for the time when I would be permitted to shoot a gun and could cast a fly with reasonable precision.

How I enjoyed watching my dad drop ducks, quail and pheasants! It was a thrill I shall never forget. If no dog was available, I would eagerly sally forth and retrieve the game myself.

During these excursions afield my father kept drilling into my young head the need for observing safety precautions. He never lost an opportunity to bring home an important point, and endless repetition was his idea of making sure I got the message.

"Never allow yourself to become so excited over the chase that you forget about your gun," he warned me time after time. "Always keep the firearm uppermost in your mind. Don't take chances. No game amounts to anything compared to a human life, whether your own or someone else's." He was most specific in his instructions. I believe I learned the lesson well.

He warned me about the dangers of going into deep water to retrieve a duck or venturing out on ice that was not thick enough to support my weight. He told me to keep my safety on until I was ready to pull the trigger. In fact, he seemed, over the years, to think of everything. I have always been grateful for the sensible advice of such a good teacher.

We went fishing together, too. At first, like all small boys, I was exceedingly clumsy with a rod. I used to get furiously annoyed because I could not cast like he could and often managed to catch my hook in a bush or tree. But he was a most patient tutor, never losing his temper over my savage outbursts. Gradually I learned to handle a line fairly well although I'm still no expert, and as the months passed became an ardent devotee of the sport. That enthusiasm has never even momentarily waned in all the intervening years.

Fortunate, indeed, is the boy who has a father or other relative who hunts and fishes. Would that all youths were so lucky. Often an adult who is not a relative can take a boy with him on his outings. This is a wonderful idea.

Every effort should be made to instill into the hearts of boys the importance of good sportsmanship. They should be taught to observe the fish and game laws and the rights of others. They should be told why it is wrong to hunt and fish out of season, catch or bag too many or violate other provisions of the laws.

One autumn day I was duck hunting along a river when a man and his thirteen-year-old son came along and joined me at the edge of a choice cattail blind.

"We're on the way back to our car," the gentleman told me. "We've been out here for hours." I had recently arrived.

"Get down!" the youth barked suddenly. "A flock of mallards is heading our way."

"We'll get down all right so our friend here (meaning me) will have a chance at them if they come close enough," the man declared. "But you and I aren't going to shoot, son. We already have our limit."

Cruel disappointment was in the boy's face as he protested. "Aw, dad, why can't we shoot, too?"

"Because it's illegal," he was told. "Laws are made for the good of everybody. Nobody likes a game hog. We're not entitled to any more birds."

"That's right, son," I agreed, anxious to press home the point. "It's the only fair way."

On another occasion, while fishing an upland stream, I met a very youthful angler, who was alone.

"Look at my creel!" he cried jubilantly. "I've really hit the jackpot today."

"It looks to me like you have your limit," I reminded him. "Have you counted your fish? You should do so from time to time."

"No, I haven't," he answered.

"I've been having too much much fun."

"Mind if I do?" I inquired.

"Go ahead," he agreed.

He did have the numerical limit. And right then I thought was a good time to do a little conservation evangelism. When I convinced him the sportsmanlike thing to do was quit for the day, and why, he said, "Mister, I guess you're right. I'm never going to catch more than I'm supposed to no matter how good they're hitting. I understand it all now." I only hope he remembered. I was glad I did my part to make a good sportsman out of him. Had I not seized the golden opportunity I would have been derelict in my duty.

When boys see the need for good sportsmanship and the strict observance of fish and game laws they seldom backslide. They usually follow the regulations all through life and even teach them to their own children. No one should ever overlook or ignore the opportunity to inculcate in the young the sportsman's creed we all admire and try to live up to.



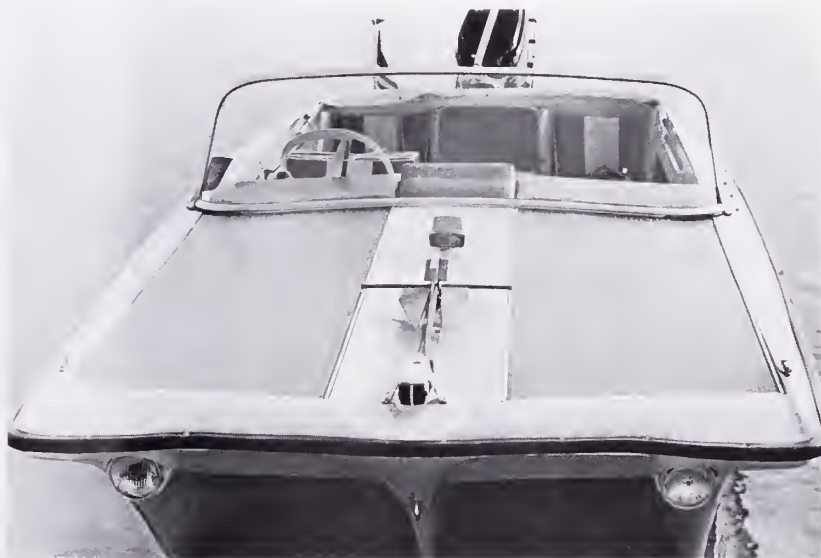
Commission photo by Kesteioo

LITTLE THINGS COUNT BIG IN BOATING

By JIM RUTHERFOORD
Radford



Above: Essential safety equipment—line, trouble light, battery jump cables, approved lifesaving devices, anchor, approved-type fire extinguisher, tool and first aid kits. Right: Wide-decked configuration lends itself to convenient anchor installation. Below: Plastic dishpans make excellent catchalls for hard-to-stow items. Plastic "squeeze" bottle is used for storage battery refills.



Photos by the author



LIKE telling your wife you love her, changing the baby or training a puppy not to chew on your favorite slippers, it's the little things in boating, too, that count.

Some of these "little" things are required by law: proper numbers and correct display of them, fire extinguishers, life preservers or flotation cushions, registration card and such. But if the experienced, safety and convenience conscious boatman were to comply only with the law and not add a few refinements of his own, he would feel that his craft was positively naked.

Take the matter of numbers, for instance. Sure, you can use a paint brush or black tape to make a passable set of boat numbers. Not neat but legal. The game warden or Coast Guard boarding officer will inspect and pass them if they are of "block characters, properly spaced and of a contrasting color." But a couple of bucks will buy a neat set of numbers that may be applied by the boat owner himself in just a matter of minutes, all neatly spaced, of the right size and in the contrasting color that will harmonize with

your boat's hull. One such letter is a transfer type which may be purchased all set up in the assigned combination on "sticky paper." The letters themselves are self adhesive, and all you have to do is peel the backing from the letters, line up the set in the proper location on your boat, press them into place and peel off the facing paper. Presto! Neat, durable boat numbers that any skipper will be proud of.

There are fire extinguishers and fire extinguishers; and there are lots of "approved" types on the market to choose from. A fire extinguisher is life insurance for your boat, your passengers and crew. Dry chemical types used on small boats should be equipped with a pressure gauge so that the condition of the propellant can be observed at all times. Extinguishers should be weighed and inspected at least twice a year. Be sure you buy a rack with yours and install it in the boat so that the extinguisher will be readily accessible. Don't let it kick around in a locker or tackle box, under a seat or in a dozen other places where it "might" be when it is badly needed.

Remember: Those flotation cushions and life preservers, although they were "approved" types when you bought them, are no longer approved if damaged or if the approval label is no longer legible. It's a good idea to give the labels a coat of clear shellac or spray them with plastic to preserve the printing. Store cushions where they will not be subject to mildew, dry rot, gasoline, oil or acid from the boat's battery.

The battery itself should be installed in a covered box and secured to the deck in a manner that will prevent its moving about or upsetting. Spilled battery acid is not fun in a small craft. A dead or damaged battery is no fun either.

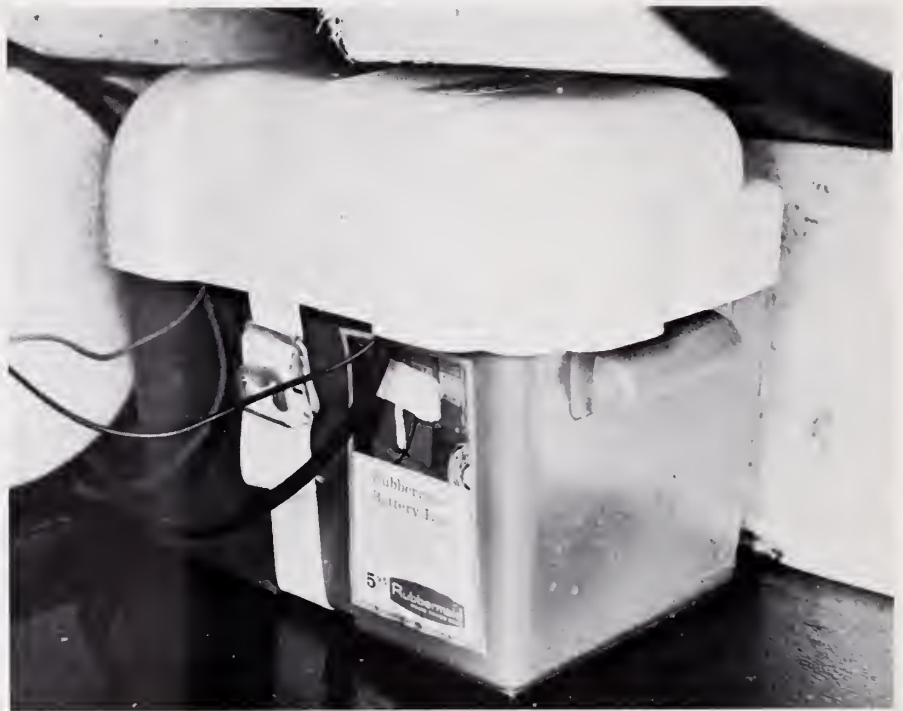
Give a boatman enough rope—and he may turn out to be a pretty able seaman. Rope is the very lifeline of safe and pleasurable boating. You will need mooring lines, anchor rope, towing lines, tie-down lines, painters and pennants. A boatman just can't have too much line. But be sure it's top quality. The synthetics, nylon and Dacron, are best for most uses. They will not rot, mildew or deteriorate in the presence of water, oil and grease. They do not have to be dried before storage. Cheapest in the long run, the synthetics are really no more expensive to buy. Test for test, nylon or Dacron is

actually the best buy. Don't use polyester ski lines for anything but water skiing. They are designed for straight, steady pulls and will not stand abrasion and flexing. Also the rather stiff, coarse fibers are hard on hands.

Anchors rate more thought and respect than is given them by the average boater. Anchors do not—indeed, should not—be heavy affairs. A 100-pound concrete block has a holding power of only 50 pounds. This same weight in a mushroom type anchor will hold 200 pounds, while a 100 pound "yachtsman's kedge" anchor will hold up to 500 pounds pull. But take a look at the relatively new patented anchors of the Danforth type. A 4 pound Danforth will hold against a 1600 pound pull in hard sand and will safely hold against a 230 pound strain even in soft mud.

All anchors must be properly "set," allowed to dig in in the bottom over which you are anchored. The amount of digging and, therefore, holding your anchor can accomplish is dependent upon the amount of line or "rode" you have out. This ratio (scope) should be at least 7 to 1 for safety under most boating conditions. That's where a lot of that line comes in mighty handy.

Unbreakable, acid-proof battery box prevents spills of acid into boat. Hold-down strap, secured to deck, keeps battery from shifting with boat's roll and pitch. Cover prevents "shorting" of battery by loose metal objects.



Simple tool kit may get boater out of trouble. Special tools at top are for changing carburetor jets and adjusting trim tab on Mercury motor.



Upward pull, as exerted by short anchor line, causes anchor flukes to lose their hold. Low angle of pull causes them to dig in and hold fast. The longer the anchor line, the lower the angle of pull, and the less likelihood of dragging. Ratio of scope of line to water depth should be at least 7 to 1.

Boatmen owning average (16 to 20 foot) craft will find two 5 pound Danforth type anchors, in combination with 100 feet of nylon line for each, a most satisfactory combination. Slightly heavier ground tackle may be desired if the boat is consistently moored under adverse conditions or left unattended for long periods.

Fenders, sometimes called bumpers, are a necessity for all boatmen. These may be anything from discarded plastic bleach jugs to expensive air-filled commercial types. In between there are various styles of plastic foam fenders that will serve to prevent marring your boat against docks and moorings or marring the boat of another when you come alongside for a chat, a drink, or for assistance. Foam plastic fenders are light in weight and easy to stow aboard the average family runabout. If you decide to use plastic jugs, here's a tip. Put a tablespoonful of baking soda and an equal amount of vinegar into a gallon jug. Screw the cap on tightly. The carbonic acid gas thus generated will increase the pressure inside the jug to give great protection between boat and dockside. Some boatmen fill the jugs with

water to accomplish the same purpose and thus have extra drinking water aboard when needed.

Flush-mount fender cleats such as those manufactured by Attwood and Allen-Jervis are a boon to the small boatman. Fender pennants mount into these with small nylon plugs or stainless steel keys so that they may be moved from one location to another as needed without the need for throwing a new hitch each time. Three of these handy cleats on each side of the boat are ample for craft in the 16-20 foot category.

If your outboard, stern drive, or conventional inboard craft has a permanent fuel system installed, make sure the tank is well secured to the deck. Avoid bow tanks if at all possible. The terrific pounding that bow tanks are subjected to may cause them to rupture, or tear loose, showering all aboard with raw fuel. Unpleasant and highly dangerous. In any location this same pounding can loosen a poorly mounted tank from its mooring. In our own small outboard the 12-gallon Tempo tank, stern mounted, is secured to the

(Continued on page 22)

First aid kit is required for award of Coast Guard Auxiliary seal. Shock cord holds kit firmly in place. Fiber data case holds author's examination forms and decals for CGA Courtesy Examination of fellow boaters' craft.



Welcome Home, Bald Eagle

By VIRGINIA HOWDYSHELL
Bolar

EVEN at a distance we recognized the powerful wing beat. Nearer and nearer it came, the shining white head and tail now plainly visible to the naked eye. Down, down it glided, slowly coming to rest on the bony arms of an old dead chestnut tree.

It was in late February of 1964, when a bald eagle settled down on Little Mountain near the boundary line of Bath and Highland Counties. At first sight of the large bird we were stunned, and then thrilled, for almost thirty years had passed since we last saw the King of the sky.

At that time several bald eagles made their home in our mountains. Almost every boy and girl in this section of the state had experienced the thrill that comes when seeing this magnificent bird in flight, and many had gazed in wonder at a huge active eagle nest in the top of a tall tree. At an early age we learned that the bald eagle, because of its grace and power, had been chosen for our national symbol and therefore should not only be respected but protected as well. But alas! The bird of wild freedom disappeared from our midst. The once active nests became tattered and torn, then gradually fell to the ground. Seldom was the name of the bald eagle mentioned. But our childhood memories of the great bird never dimmed, and now on a still and uncloudy winter day we proudly saluted, as the eagle from days of our yesteryear lit down on the side of the mountain.

For more than twenty minutes he plucked away at his gleaming feathers, stopping once in awhile to look down at the ground below. Finally the feather grooming was completed. The powerful wings began to beat and the big brown bird with the snow white head rose up and up, higher and higher until he was well above the tree tops, then sailed off in the direction of Jack Mountain.

Long after the bird disappeared from sight we stood gazing in the wide blue yonder a little puzzled. It had not acted like a tired traveler that had just wandered in from the Coast, but more like a resident flying in familiar territory. It was then we remembered that reliable persons had told about seeing a pair of dark brown eagles in the mountains several times. Also knowing that immature bald eagles are dark brown all over, the shiny white head and tail not being attained until about the fourth year, it was possible that one, and perhaps two, of the big birds had been in our area for some time.



Needless to say, from that day on we became regular sky watchers and throughout the spring, summer and fall, saw the bald eagle many times.

On one occasion in late October, while watching a long flight of hawks migrating to winter headquarters, we saw the eagle soaring round and around near the south-bound birds. Perhaps, we thought, he too is heading south. But early next morning we discovered the eagle was still with us, dipping in and out of the pines, calmly taking a cussing from an old black crow and his flock of wives.

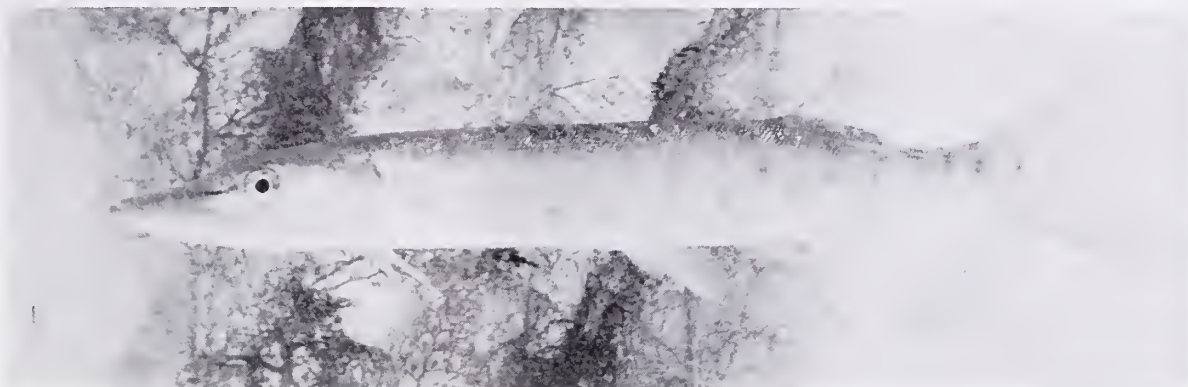
In early November, Virginia's hunting season arrived and with it came fear of safety for the big wild bird. After contacting several hunters the word quickly spread, "Shoot legal game; spare the bald eagle." Several days after the opening of the season, a young, out-of-state fellow gave this account of his day afield.

"All day I'd chased a large flock of wild, long-legged turkeys on Jack Mountain with no success. In fact I'd almost walked the soles off my boots so I decided to sit down and rest. Just about the time I leaned back against a tree I heard a z-o-o-m overhead. I looked up, and what I thought was the granddaddy of all wild gobblers crossed a path of open sky between a bunch of pines. Before I could get in position to shoot, the big bird landed. For a moment I was dumbfounded: not even a wild, long-legged Jack Mountain gobbler had a white head. Then came the realization that for the first time in my life I was looking at a live American bald eagle. What a sight! What a bird!"

Yes, the bald eagle has returned to our mountains where the wild gobblers strut and baby deer play. We hope all who are fortunate enough to see this living symbol will try to protect, not destroy. Then, many years from now others may still be able to say as the young hunter said that day, "Welcome, honored bird of the sky."

PIKE-MUSKIE REARING OPERATION EXPANDS

*Carp fry
prove key
to critical
food supply
problem*



Commission photos by Kesteloo

By HARRY L. GILLAM
Information Officer

JUST as changes in game animal distribution and habitat have opened the door for the introduction of exotic game species, so have changes in the aquatic environment created situations where non-native species may be able to fill an unoccupied niche. Reservoirs with their large expanses of water, abundant food and heavy fishing pressure seem to encourage an overabundance of mature forage fish and a scarcity of predators. Needed seems to be a super predator that can consume rather mature forage species and prevent the overpopulation and stunting



Northern pike and muskies are hatched in jars through which water is circulated to keep them aerated and agitated. This technique is also used on trout and rockfish eggs in Commission hatcheries.

that so often occurs. When candidates for such a super predator are reviewed, northern pike and muskellunge with their cavernous mouths and insatiable appetites seem to possess all the qualifications. It was with the hope that these species would actually improve freshwater fishing, in addition to adding another species to the available list, that the Game Commission began a program of experimental introduction with these natives of Virginia's neighbor states. Fisheries biologists also have high hopes of establishing self-sustaining wild populations in a few Virginia streams as found in neighboring West Virginia, North Carolina and Tennessee.

The rearing of northern pike and muskellunge for experimental stocking in suitable Virginia waters involves a great variety of Commission facilities. The program began in 1963 when about 60,000 northern pike fry and 40,000

A young muskie surveys his domain. These renowned fighters have been successfully introduced in states which border Virginia in waters similar to those found here.

muskellunge fry obtained from the Pennsylvania Fish Commission were stocked in Gaston Reservoir. To date, no creel fish from that planting have been authenticated, but this is not surprising when the average survival rate of stocked fry is less than one in a thousand. With this fact in mind, Virginia's fish culturists embarked on a program of rearing the fish to large fingerling size where better survival is assured.

A few fry of both muskellunge and northern pike were held at the Commission's King and Queen Fish Cultural Station in an attempt to develop a ready supply of brood fish. Otters and other predators cleaned out the northern pike but 16 large muskies survived and by March of this year averaged 26 inches in length and four pounds in weight. These fish will serve as Virginia's muskie egg source in 1966 when they will have attained sexual maturity.

In the meantime, to keep the program moving it was back to Pennsylvania in 1964 for more eggs. From the one quart of muskie eggs made available a total of 7,988 muskies were stocked as 3"-11" fingerlings in the summer and fall of 1964. The bulk of these, 6,840, were planted in the newly constructed Smith Mountain Reservoir where conditions were considered ideal. While a considerable array of problems was encountered, the fisheries workers were justifiably proud of this first effort.

This year's efforts began with a quart of muskie eggs and a quart of northern pike eggs, hatched at the Front Royal

(Continued on page 20)



The growing pike are held in these small tanks for the first two months to facilitate disease control and size grading.

THE MYSTERIOUS ANTICS CALLED



HAVE you ever been out on a summer bird hike and noticed some bird dancing and staggering around on the ground, like a drunk doing the twist? If you have, you may have observed a rare occurrence, *bird anting*, one of Nature's strangest mysteries, still fascinating and confounding ornithologists today.

Anting is referred to when a bird clutches an ant (or any other article or substance from burning cigarette butts to soapsuds) in its bill, contorts itself into ridiculous positions, and strokes the object against the wing and tail. While doing this, in most cases, the bird seems to experience an almost trance-like ecstasy and is usually oblivious to its surroundings.

Today there are one hundred forty-eight species of birds known to ant. Most of these are passerine (perching) birds but others, such as the great horned owl and kingfisher, ant rarely. Many of the common birds such as starlings, grackles, blue jays, and crows are known to ant; yet this performance is not often observed among wild birds, and very few persons have been able to study it.

There are two major types of anting, active-anting and passive-anting. In active-anting, a bird normally applies crushed ants directly to certain parts of its plumage with the bill, and this is usually associated with a crazy dance. Birds that ant passively assume a grotesque posture over an ant hill and simply allow the live ants to swarm over its body.

Simmons (1957) gives a very graphic picture of the active-anting process.

The bird seizes a worker-ant in the tip of its bill, at

almost the same instance contorting with swift movements into the anting posture. One wing is lifted forward and sideways away from the body, carpal raised, the primaries spread and often brushing the ground. The tail is usually opened a little and jerked forward to the same side as the raised wing, sometimes so vigorously and so completely that the bird loses its balance, especially if it treads on it. Still in the very second that it picks up the ant and twists itself into position, the bird strokes the insect with a fast, flicking action down the underside of the extended wing, moving from near the base of the feather to the tip.

Ants, of course, are the most common articles used in the process of anting, but it's quite interesting to note the wide variety of articles used by birds as substitutes. Most ants can produce a repugnant spray from formic acid glands, and it seems that substitutes give a similar burning or warming sensation either chemically or physically. Just a sample of substitutes known to have been used by birds are: beer, lemon and orange juice, vinegar, hot chocolate, soapsuds, sumac berries, burning cigarette butts, and mothballs. One instance can be cited where a tame magpie (*Pica pica*) used baked ants for the anting procedure. The magpie found several desirable ants, flew to its owner's shoulder carrying the ants in its bill, dipped the ants in the hot ashes of his pipe, and then applied this mixture to its plumage.

Theories of bird anting are as unique as the originators themselves. An early hypothesis, now considered quite unlikely, was that birds were tucking ants into their feathers to carry them away, possibly as a source of food during migration.

Another questionable hypothesis is that of birds wiping off ants on their feathers, to avoid the stinging formic acid, before they eat the ants. Not all birds eat ants after anting and, furthermore, some birds use ants that are known not to spray formic acid.

Some ornithologists believe that the birds are manicuring their feathers, perhaps spreading the oil from the ant to their feathers as a supplement to the birds' own preen-oil for irradiation and vitamin development later.

Another plausible theory is that the birds ant simply for the pleasure and exhilaration derived from the experience. Some even go so far as to say that this experience may be similar to a man drunk from alcohol—who knows?

The most popular and widespread theory of bird anting is that the formic acid from the ants either drives away or kills the parasites of birds. The most recent substantiation of this theory was found by Kelso and Nice (1963) after they translated the works of the Russian biologist, Dubinin. Dubinin made very detailed necropsies on anting and non-anting Steppe Pipits (*Anthus pratensis gadlewskii*) and found that the anting birds had significantly fewer feather mites than the non-anting birds.

Whatever the real reason for anting (ornithologists are not in agreement on a single hypothesis) birds are still anting. Keep your eyes "peeled" this summer while you are in the field "birding"; maybe you can add to our present information on this relatively rare and seclusive antic of birds.

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THE smartweeds, or Polygonums, have long been known to be among the most useful of wildlife foods. Lately there have been experiments on state and national wildlife areas and on private plantations and reserves in an effort to raise crops of smartweeds for seed use by wildfowl.

Efforts in smartweed farming have been hampered by scarcity of commercial seed supply. Seed must be hand gathered or combined and planted in late autumn, or plants transplanted in early spring. Some farmers could well investigate the possibility of turning their weedy smartweeds into a crop by harvesting the seeds and offering them for sale. Smartweed seeds germinate better in disturbed soil, so disking or otherwise stirring up a piece of bottomland will often encourage their growth.

How important are these plants to wildlife? Well, experts list them as third in the percentages of plant foods used by game ducks. Smartweed seeds are eaten by at least fifteen kinds of ducks, and especially by mallards, pintails, green-winged teal, blue-winged teal, lesser scaup, and ring-necked ducks. Preferred smartweeds are *Polygonum hydropiperoides*, *P. pennsylvanicum*, *P. amphibium*, *P. punctatum*, *P. coccinea*, *P. Hydropiper*, *P. densiflorum*, and *P. lapathifolium*. Ruddy ducks will eat smartweed seeds nine months in the year, mostly *Polygonum Hydropiper*. It is said the lesser scaup will eat twelve different species of smartweeds. Even ducks like the bufflehead, that eat mostly animal food, will take smartweed seeds when they are available. Other ducks using smartweeds occasionally include wood ducks, black ducks, American widgeon, and shovelers. Canvasbacks will eat the seeds of *Polygonum hydropiperoides*.

Other waterfowl are also users of *Polygonum* seeds. *Polygonum punctatum* seeds are important in the diet of the whistling swan. King rails, soras, and clapper rails, Wilson's snipe, purple gallinules, and coots, all eat smartweed seeds.

By MARIE B. MELLINGER
Hardeeville, South Carolina



Top row: *Polygonum pennsylvanicum*; *P. lapathifolium*; *P. longistylum*; *P. punctatum*. Second row: *P. hydropiperoides*; *P. setaceum*; *P. orientale*; *P. densiflorum*. Third row: *P. convolvulus*. Bottom row: *P. arifolium*; *P. beyrichianum*; *P. sagittatum*. Below: a field of *P. lapathifolium* planted for wintering ducks.

GETTING SMART WITH SMARTWEEDS

The upland species of smartweed grow so abundantly in cultivated fields that it should be no problem to encourage their growth to feed upland game birds. Their seeds are important to bobwhites, California quail, ruffed grouse, prairie chickens, ring-necked pheasants, mourning doves, ground doves and woodcocks. They have incidental use by

fox squirrels. Smartweeds also provide food for about sixteen species of songbirds.

In these days of increasing concern over decreasing wildlife, it would be a smart move to encourage farmers and landowners to put less productive areas and wetlands into smartweeds for wildlife.





T. D. Watkins of Midlothian, veteran of 18 years' service on the Commission, was first appointed in 1947. He already had served nine years prior to the effective date of the amendment which now permits each Commissioner to succeed himself in office only once. Mr. Watkins served as Commission Chairman from July 1962 to July 1964.

COMMISSION MEMBERS' TERMS END

I 965 is a highly unusual year for the Commission of Game and Inland Fisheries, as four of the ten members of that body leave office after many years of faithful and dedicated service to the sportsmen of Virginia.

Progress in the development and management of wildlife and other outdoor recreational resources comes slowly, and day by day accomplishments often are almost imperceptible. But looking back over their years on the Commission these retiring members will note that great things have happened, and they can take pride in the part they have played in bringing these changes about.

As late as 1950 there was no Commission program of acquisition of state owned public hunting land. Now a vast network of wildlife management areas, all open to public hunting, extends from the waterfowl marshes on the shores of Back Bay to the state's far western mountain ranges.

Sustained yield deer herd management has resulted in an increase in the annual harvest from less than 11,000 in 1952-53 to well over 30,000 in recent seasons.

The wild turkey has been brought back to areas from which it had disappeared decades ago, with such success that limited hunting of newly established flocks has become possible in a number of western counties. Successful experiments with spring gobble hunting have paid off in thousands of additional man hours of sport and outdoor recreation of the highest quality.

Manageable, high yield public fishing impoundments have been constructed; a special fish-for-fun trout angling area has provided trout fishing of unsurpassed quality; and pay-as-you-go trout fishing has been instituted for those who want to fish for trout "for keeps" all summer long.

The law enforcement division has been organized, manned, trained and equipped so as to achieve a degree of excellence and professionalism heretofore unknown to game law enforcement in Virginia.

The Commission has assumed the task of enforcing boating safety laws, and of providing state facilities and services to the boating public. Dozens of additional access areas and boat launching ramps on public waters have been provided.

Of these and many other accomplishments the retiring Commission members, as well as those who will continue to serve, may well be proud; and for them the sportsmen of Virginia may well be thankful.



Harris Studio photo, Roanoke

Holman Willis, Jr., of Roanoke, was first appointed to the Commission in 1953 and was reappointed for a second six-year term in 1959. Mr. Willis was Commission Chairman from July 1964 until the expiration of his appointment last June.

Homer G. Bauserman, Sr., of Arlington, also completed the maximum two consecutive six-year terms permitted by law, from 1953 to 1965. Mr. Bauserman was Commission Cochairman from July 1964 until the expiration of his term of office.



Raymond R. Guest, former state Senator and owner of the Powhatan Plantation horse breeding farm in King George County, was appointed to the Commission of Game and Inland Fisheries in 1959. He resigned this year to accept appointment as United States ambassador to Ireland.

Conway Studios photo, N.Y.C.



VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

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FRONT ROYAL PONDS OPENED FOR NEW ANGLING STUDY.

Eight experimental ponds at the Game Commission's Front Royal Fish Cultural Station were opened again for public angling, this time to evaluate the effects of a 12 inch bass limit. The Commission just wrapped up a similar four-year evaluation of a 14-inch minimum size limit in September of 1964. The new study will closely parallel the old so that the relative merits of the two regulations can be compared.

All of the ponds were stocked this spring with adult bass and bluegills in a carefully calculated ratio to simulate a natural fish population. This speeds up the study about two years over starting with fry. Four of the ponds will be open with a 12-inch limit on bass, and the other four will be open with no size limits. Regular daily creel limits of 8 bass and 25 bluegills will apply. A valid fishing license is required as on other public waters. The ponds will be open for fishing from 8 a.m. to 4 p.m. on weekdays (closed Mondays), from 8 a.m. to 8 p.m. Saturdays and from 1 p.m. to 8 p.m. on Sundays.

During the previous four-year study 11,346 anglers enjoyed fishing in the hatchery ponds. Success varied widely, but some fishermen brought home excellent strings. The 14-inch study demonstrated that ponds where bass were protected by the size limit produced exceptionally large bluegills and ultimately produced about the same poundage of fish as ponds where no limit was in effect. The larger bass protected in these ponds were able to reduce bluegill numbers sufficiently to prevent overpopulation and stunting. The new study will help to determine whether 12-inch bass can do the job as effectively.

VIRGINIA COMMISSION VOICES OPPOSITION TO DODD BILL.

The Virginia Commission of Game and Inland Fisheries at their June meeting in Virginia Beach officially went on record as opposing Senate Bill No. 1592, introduced by Senator Thomas Dodd, the most stringent antirearms bill introduced in Congress in recent years. The bill would prohibit all mail order sales of firearms, and drastically curtail over-the-counter sales of sporting arms and ammunition by imposing severe federal regulations and high license fees. It would also give the Secretary of the Treasury broad, discretionary, and almost unrestricted authority to impose further regulations upon the purchase, sale, or transport of firearms by individual owners.

Speaking for the Virginia Game Commission, Executive Director Chester F. Phelps said, "The Commission is opposed to this particular legislation because it would place undue restrictions and hardships upon the legitimate and responsible owner and user of firearms without accomplishing anything at all constructive toward preventing the criminal misuse of firearms."

In opposing S-1592, the Virginia Commission joins most other state fish and game management agencies as well as the National Rifle Association, the Wildlife Management Institute, and most sportsmen's and conservation organizations throughout the state and nation. All agree that the purpose of the bill, which is to cut down the use of firearms in criminal acts, is commendable; but they challenge its effectiveness in accomplishing this and fear its possible side effects on legitimate gun use.

Experience in localities which have restrictive firearms laws shows that legitimate ownership and use of guns decreases when subjected to complicated regulation, while the unlawful ownership and criminal use of firearms is not curtailed. Since nearly all wildlife management work is financed through hunting license sales and from excise taxes on sales of arms and ammunition, it is feared that nation-wide restriction of firearms ownership and use would cripple the conservation efforts of all state game and fish departments.

Access to the James

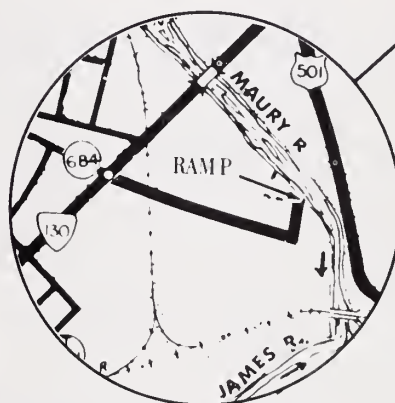
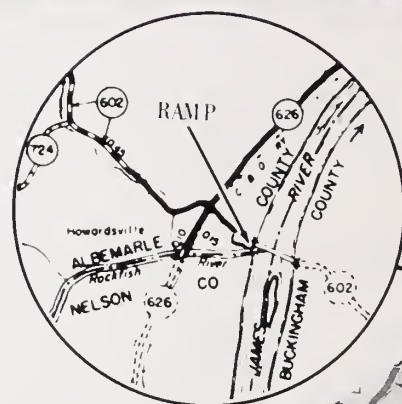
By HARRY L. GILLAM
Information Officer

LIKE the Shenandoah, the James River above Richmond is primarily a float fishing stream. Large boulders, narrow channels and shallow waters prevent the use of big boats and big motors except for a short distance above some of the low dams. Smallmouth bass are the prime angling attraction along with redbreast sunfish. Nice sized channel catfish are abundant in this section of the river. A few bluegills, crappie and largemouth bass also turn up in anglers' creels.

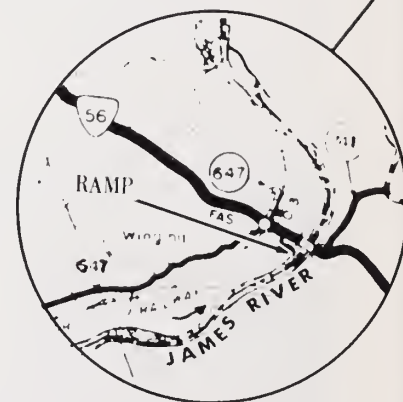
All the James River areas developed to date have concrete ramps and graveled parking areas. Most are strictly for fisherman access with shallow water off the end of the ramp preventing the launching of large boats. Watkins, Howardsville and Glasgow are exceptions, however, with deep water at the ramp permitting the use of big boats in a limited section of the river at these points.

The launching points are located at spaced intervals to allow float trips from one to the next. At present most are too far apart for convenient one-day floats but from Columbia to Cartersville and Cartersville to West View are two sections, each of which can be covered in a long day's trip. Most floating on the James involves some portaging over rocky stretches so johnboats and canoes are the most practical craft.

HOWARDSVILLE LANDING—Located off Route 602 east of Howardsville near the west end of the bridge, this ramp is on the Rockfish River at its confluence with the James. It can be reached via secondary route from U. S. 29, U. S. 60 and Route 53.



GLASGOW LANDING—This ramp is on the Maury River immediately north of its confluence with the James in the town of Glasgow. It is reached from Route 684 in town and is just below the Route 130 bridge.

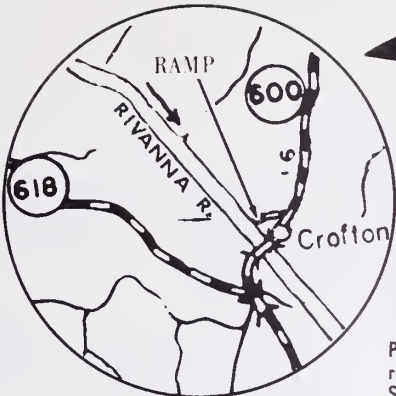
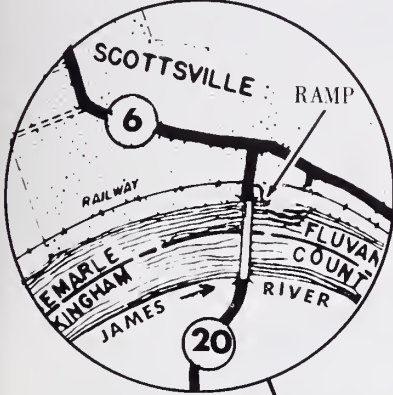


WINGINA LANDING—Giving access to the north side of the James River, this landing is located south of Wingina at the Route 56 bridge. The ramp is reached by a short access road leading south from the bridge approach.

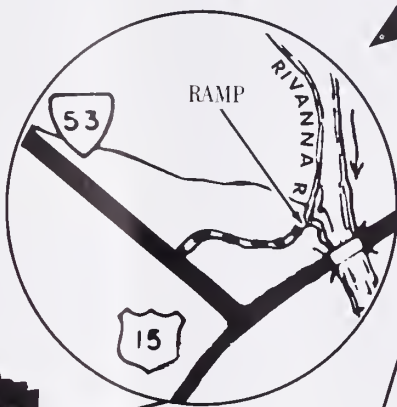
Wingina Landing is typical of the picturesque put-in points along the upper James River. Although designed primarily for float fishermen, most of these access areas feature concrete ramps.



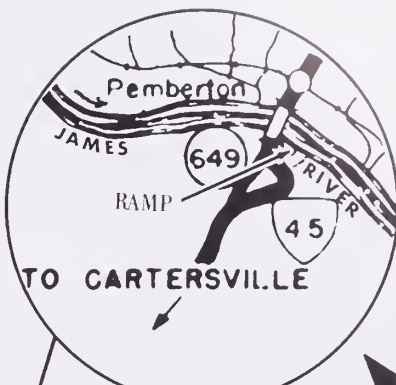
SCOTTSVILLE LANDING—Located on the north side of the Route 20 bridge in Scottsville, this concrete ramp and parking area provides access to the James River on the Fluvanna County side.



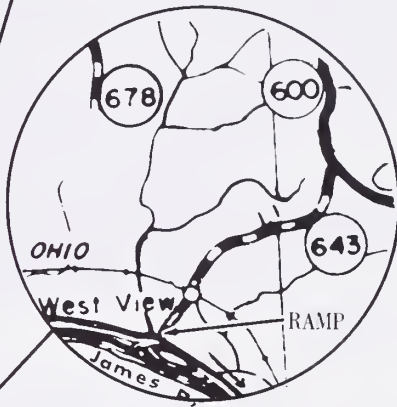
CROFTON BRIDGE LANDING—This landing south of Charlottesville on the Rivanna River is accessible via Route 600 from U. S. 250 or State Route 53. The ramp is located on the northwest side of the river near Crofton Bridge.



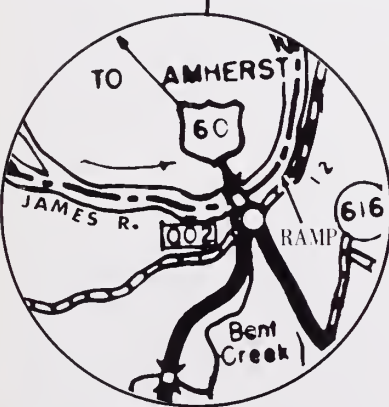
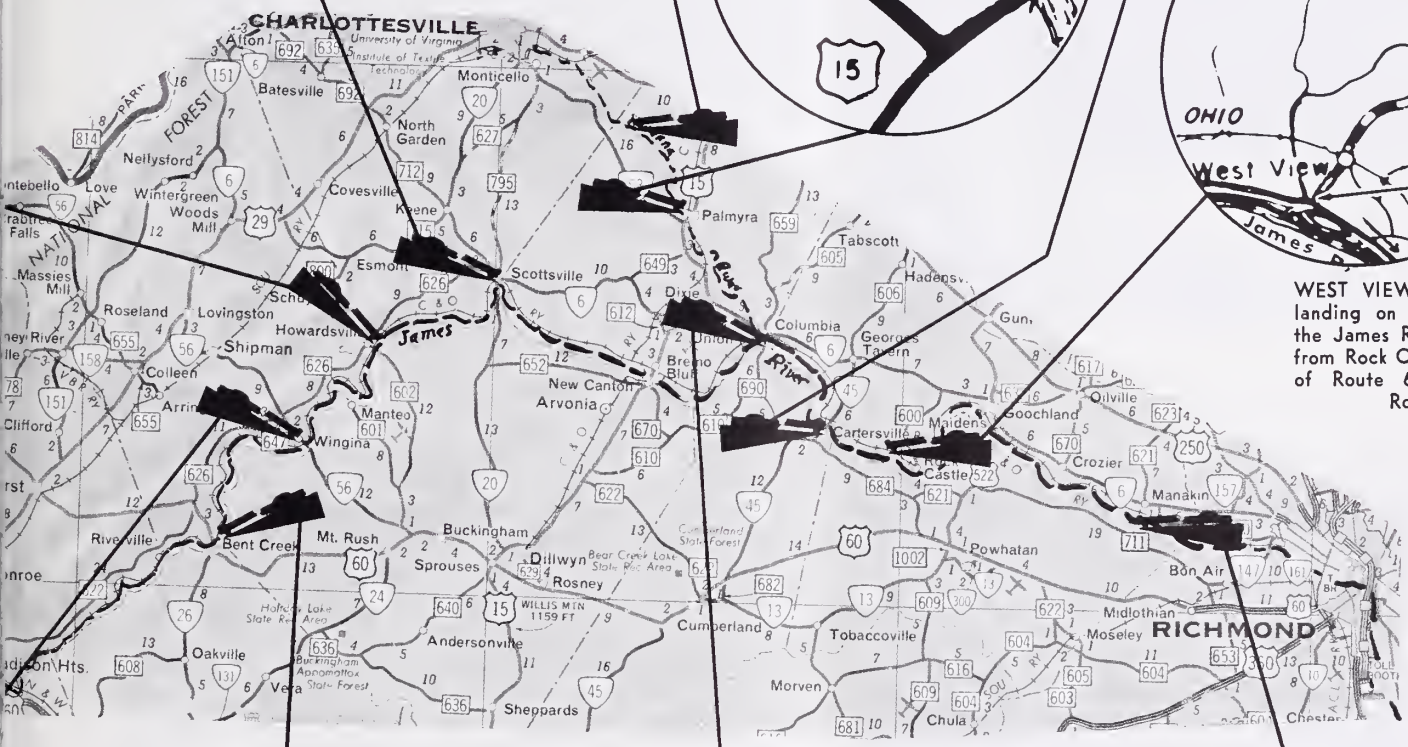
PALMYRA LANDING—The access road to this landing leads off of State Route 53 near its junction with U. S. 15 west of Palmyra. The ramp provides access to the Rivanna River from the west side.



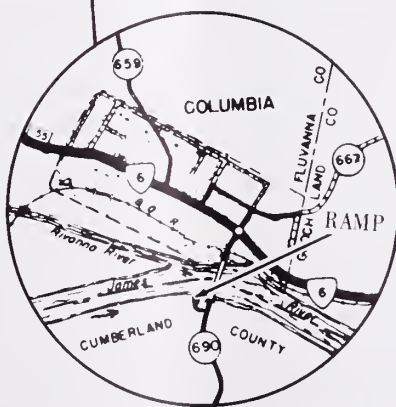
CARTERSVILLE LANDING—Located off of State Route 45 just north of Cartersville this concrete ramp provides access to the James River from the south side.



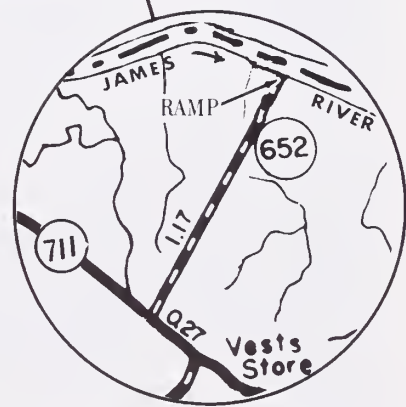
WEST VIEW LANDING—This landing on the north side of the James River just upstream from Rock Castle is at the end of Route 643 leading from Route 600.



BENT CREEK LANDING—This landing is located near the Route 60 bridge on the south side of the river adjacent to the town of Bent Creek. The ramp is reached by means of a secondary road leading east along the river.



COLUMBIA LANDING—Located on the south bank of the James River across from the mouth of the Rivanna River, this area lies just across the James from Columbia and is reached via Route 690.



WATKINS LANDING—This landing on the south side of the James River in Powhatan County is the closest Commission Landing to Richmond on the upstream side. It is reached via Route 652 leading north from Route 711 which parallels the river.



Leonard Lee Rue photo

“Pop Goes the Weasel”

By DOROTHY E. ALLEN
Education Officer

SOCIETY dames covet ermine. It is a status symbol of the nightclub world. At one time ermine was the “robe of royalty,” associated with kings, queens, coronations and lots of money. If some biologist complimented one of the ermine-wrapped elite on her splendid *weasel* cloak, the aristocrat would probably be highly indignant. Yet, this beautiful white fur comes from one of the most bloodthirsty of all mammals. The costly ermine, so prized by m'lady, is really a weasel dressed in his winter coat. It takes 180 of these pelts to make one full-length coat!

The fur itself does not change color. Throughout northern climates the brown hairs of the weasel start falling out in autumn, and are generally replaced by a new growth of white, complete except for the black-tipped tail. In the spring the process is reversed. Virginia's weasels remain shades of rich-blending blacks, umber browns or tans above the yellowish-white beneath. The weasel is long bodied, eleven inches including a three-inch tail, has a small head and its ears are low and rounded. Its musk glands are capable of secreting a potent and very strong, musky odor which is sweetly sickening.

This wily little savage, endowed with the characteristic of an uncontrollable instinct to murder, favors night life; but, unlike the socialite, shuns attention and strives to elude the designing eyes of men. A small, six- to twelve-ounce animal, the weasel is an energy-packed bundle of dazzling motion, lithe almost to the point of being serpentine. Boldness and defiance come as naturally as breathing to this solitary hunter.

Naturalists estimate that for the average man to equal the weasel's strength, he'd have to pull with moderate ease a

dead weight of thirteen to fourteen hundred pounds! The wispy little killer, with razor-sharp senses, gracefully maneuvers to prey on animals six times his size and weight. Eyes glittering with an angry light, he will readily slaughter everything within reach. Traveling on furry soles, like lightning, he pounces upon a victim and with uncanny accuracy slashes his teeth, which are well designed for tearing flesh, into the large neck veins. In the case of the victim being a large mouse, the weasel's tremendously strong neck and jaw muscles enable it to crush the skull with a single snap. After satisfying their blood thirst they eat their victim's brains and barely touch the meat. The weasel's fast-acting digestive system makes it necessary to seek food often. Seventy to ninety percent of the weasel's diet consists of mice, ground squirrels, rats, gophers, shrews and moles.

Weasels are intensely active and alert and are about at all seasons of the year inhabiting farmlands, woodlands and wastelands, setting up housekeeping in ground holes under tree roots, rock piles, hollow logs or stumps. They mate probably in July but pregnancy does not actually begin until months later. This is known as delayed gestation period. The nest is carefully lined with grass and fur of various preyed animals and is the maternity ward when four to six young enter the world in April or early May. The babies are born nearly naked, helpless and blind. The mother's milk is extremely rich, promoting rapid growth. She will squeak and chatter when angry at the young, but other times is known to purr and to coo softly and musically. At the end of three weeks they are robust enough for meat, and their training period begins. At three months the young show signs of wanting their independence and by one year have reached maturity.

Their enemies are foxes, owls and man. Being very curious they seem to enter a trap without suspicion.

Nature devised the two best mousetraps in existence when she produced the barn owl and weasel. The weasel is rather a benefactor than an enemy to the farmer, ridding his barns and fields of rodents that would destroy crops and food-stuff many times as valuable as the poultry and eggs the weasel occasionally takes. Whenever a weasel has taken up residence, the mice in the vicinity for half a mile around have been found to diminish rapidly in number. We can't help admiring such a creature for its supreme courage and absolute fearlessness. Its winter coat is nice, too!

King of the Lily Pad



BULLFROG

(*Rana catesbeiana*)

By DOROTHY E. ALLEN
Education Officer

THERE'S only one thing that is more fun than froggin', and that's eating them! Alive they have leaped their way into literature via Mark Twain's "The Celebrated Jumping Frog of Calaveras County"; dead, via a flash in the pan they become a poetic repast.

Since Roman times the frog's hind legs have been served as one of the greatest delicacies. "People who cook only the legs are throwing away a lot of good succulent meat," according to Mr. Lloyd A. Adams of 716 Cowardin Avenue, Richmond. Mr. Adams was rather indignant about "froggers" who waste good meat by keeping only the "jumpers" when he asked, "Would you cook only the drumsticks of a chicken and toss the rest in a garbage can?" He stated he would be glad to clean frogs for anyone who wanted just the legs if he could have the rest of the amphibians.

For such a cuisine one must first hunt down the main ingredient. Mr. Adams believes that to become a successful "frogger" one should know something about the habits of his prey. During the first warm days of late April or early May bullfrogs emerge from their winter hibernation in the mud about ponds where they had burrowed deep enough to escape freezing. Their variable body temperature corresponds to the temperature of the surrounding air and water, and they are thus referred to as cold-blooded animals. Having a giant appetite from hibernating, "Mr. Bull" becomes the greatest flykiller in the universe. In fact, the frog will take anything that moves, and that it can get in its mouth. Even a small water snake may become the frog's spaghetti-style meal.

(Continued on page 18)

Commission photos by Kesteloo





The "King of the Lily Pad" is a skillful camouflager, having the chameleon power to change color to harmonize with its environment. Ever aware, he squats on his hind webbed feet with his thumbled hand appendage turned under as though resting on his forearm. On the bottom of his toes are hardened places at the joints which give the foot a strong hold when pushing for a jump. He is quite comical looking with the corners of his large mouth extending well back beyond the eyes. The jaws are horny and are armed with minute teeth, which are for the purpose of biting and holding food rather than chewing it. He flips out his long sticky tongue, which is attached to the front of his lower mandible, and flips it back in so rapidly it's almost impossible to follow the swift movement. After snatching a mouthful of food his eyes close and he assumes a blissful expression. This seemingly satisfied look is produced by his cherry-shaped, bulging eyes being pulled back in their sockets to help push the food down, making it easier to swallow. Only a thin membrane separates the eyes from the roof of the mouth. The bullfrog's prominent eyes are very beautiful when observed closely. The iris is a dark bronze with the appearance of having gold dust scattered in it. A gleaming gold edge surrounds the black pupil and outer margin. The frog appears to be winking. This is because the lower lids work like shutters. When the eyes pull in, the shutters (a translucent fold acts like a nictitating membrane that shields the eye from damage and protects them under water while allowing partial vision) come up and the eyes are closed. When the eyes push out, the shutters come down and the eyes are open.

Having satisfied his hunger, the bullfrog advertises that he wants to get on with the business of mating. In booming assertive solo concerts of a repertoire of "Jug-o-rum . . .



Mr. Adams, a handful of frogs, and his frogging net. At far right is a homemade device he uses to dispatch troublesome water snakes.

Jug-o-rum." Maestro Bullfrog croaks vociferously, as though he thinks the moon rises just to hear his profundo croakings and grunts. These concerts, that are taken for granted by ruralites, oftentimes keep city-bred folk awake and annoyed to distraction. The master musician receives encores from the female spectator who ends up laying around 20,000 eggs in a jelly-like mass which, in a couple of weeks, develop into tadpoles. This seems to give his lordship additional reason to croak.

Frogs are typical amphibians whose place in the evolutionary scale forms a fusion of the characteristics of fishes and reptiles. In the tadpole stage they bridge the gulf which

Male bullfrog (right) has ear disc much larger than his eye. Ear disc of female (left) is only slightly larger than eye.



A sharp blow on the head, a one-inch incision in the middle of the back, two quick pulls with the pliers, and the frogs are ready for a hot skillet.



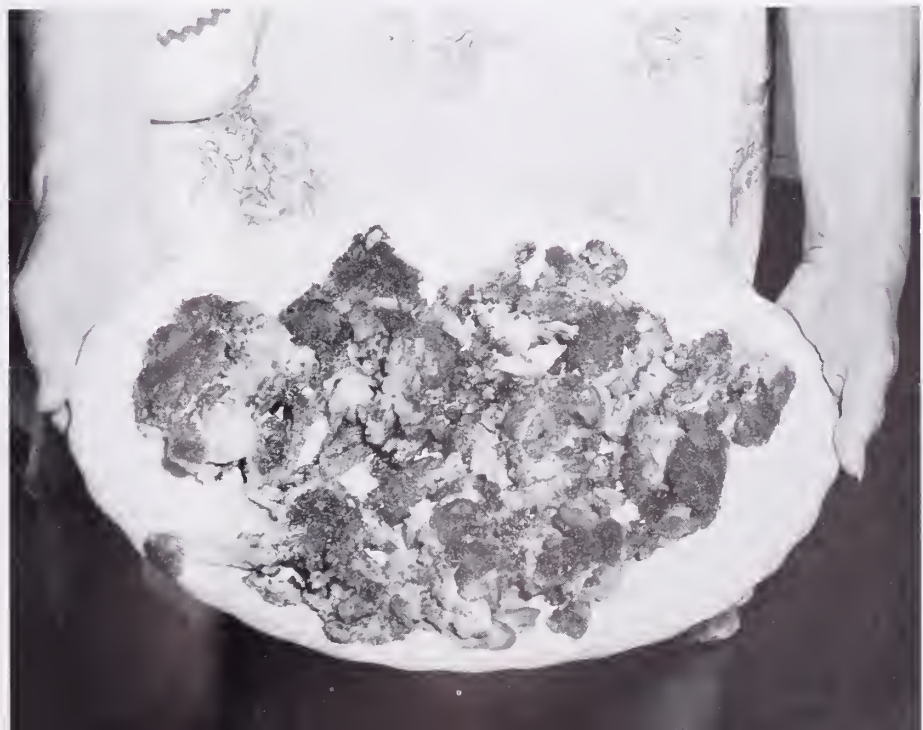
separates creatures of land and water. During the time the tadpole is developing into a frog its gills become greatly reduced, the tail fin is absorbed into the body, the larval skin is shed, lungs begin to form, legs sprout, and its eyelids emerge and partly cover the eyes. In about two years these tadpoles or pollywogs complete their metamorphosis and become frogs.

Frogs are what Mr. Adams wants. Armed with his own special frogging gear he seeks out the makings of a delicious meal. He has rigged a spotlight, connected to an auto battery, so that he can hold the light with his teeth, and shine it in whatever direction he focuses his eyes, thus leaving both hands free to manipulate his frogging gear. The light has a drop cord that enables him to walk fifteen feet on

the shore while it continues to get its power from the battery in his boat or parked car. The frog freezes in the spotlight long enough to be captured. Mr. Adams shuns the use of a gig. His home-made outfit is basically a seven-foot mop handle with a six-inch diameter ring that will fit over a frog. Attached to the rim of the ring is a 30-inch shrimp net, cut in half. He selects the "right" location where the water is still but not stagnant for his frogging sojourn. With the landowners' permission and a friend to paddle the boat, Mr. Adams successfully netted eight frogs one night in June this summer, which he considers about an average catch.

In Virginia there is no closed season or bag limit on frogs, but a license is required.

A plate of golden brown, hot, tender frog meat. The end product of a successful frogging venture—a gourmet's delight.





These three northern pike were all hatched at the same time and show the wide variance in growth rates typical of these fish. They must be kept constantly separated by size to prevent cannibalism and to facilitate feeding since each size class receives a different size minnow as food.

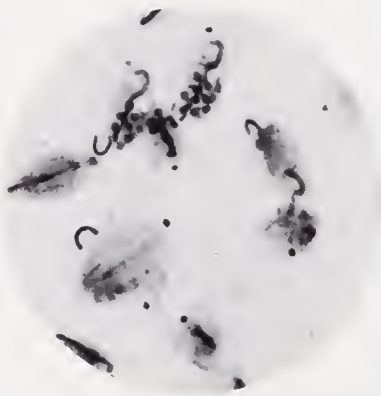
Pike-Muskie Rearing Operation Expands

(Continued from page 9)

station. The eggs are hatched in jars through which water is constantly circulated to keep them agitated and aerated.

Hatched with a nervous disposition and an almost insatiable appetite, northern pike and muskellunge present unique difficulties in rearing compared to other freshwater species. The newly hatched fry are first fed on *Daphnia magna* (water fleas) and other smaller species raised in quantity in the hatchery ponds. From here on it becomes a race to match water temperatures and production facilities to the fast growing fish. *Daphnia magna* will not multiply rapidly after the water reaches 75°, so they can be produced only at cold water hatcheries during summer months. Minnows, the pike's next food, must be produced in warmer water as carp and goldfish cannot be induced to spawn satisfactorily at temperatures below 70°. Thus begins the fast shuffle to get everything in the right place at the right time. The diet must be changed from daphnia to minnows after the first few weeks or the fish will either die of starvation or resort to cannibalism.

Daphnia, or water fleas, are the pike's staple diet from time of hatching until about one month of age. These shrimp-like animals can be produced abundantly in hatchery ponds at water temperature below 70°.



With a four-inch pike or muskie capable of devouring up to 10 one-inch minnows per day, a pond with 40,000 of these hungry little monsters can deplete the supply of available food in a hurry. Supplying the right quantities of food at the right time has been the major problem in rearing pike in state hatcheries, but fishery technicians think they may now have the answer.

For the solution of the mass production of minnows, fishery workers have turned to the carp whose millions of eggs provide a logical starting point. The carp's normal spawning period in late May and early June nearly corresponds with the period when the young pike, hatched in

From a diet of daphnia the rapidly growing pike graduate to small minnows. With a pike capable of consuming up to 10 minnows per day, it is at this stage that food production becomes a critical race.



April, become large enough to feed on minnows. By holding the carp under conditions which inhibit spawning, then injecting them with hormones to make them spawn, they can be made to spawn on cue, just in time to hatch the required supply of minnows for the hungry pike.

Carp from the Game Commission's Hog Island Waterfowl Refuge are placed in concrete ponds. New brood fish are obtained each year because big carp can be seined more cheaply than they can be held over at the hatchery. By holding these fish in large concentrations in the concrete ponds, spawning, which normally occurs in late May or June, is postponed for a month or more.



Fathead minnows are one source of food for muskies and northern pike. They spawn naturally under special log platforms in hatchery ponds and the minnows are seined when they reach proper size.

Carp are injected with pituitary extract to induce spawning and placed in a pond where special mats of Spanish moss have been arranged on the bottom to catch and hold the naturally adhesive carp eggs. These mats of eggs are subsequently hatched and the fry fed to the growing pike which arrive at King and Queen hungry after their daphnia diet at the Front Royal and Buller facilities. Spawning and hatching of carp can be geared to the young pike's appetites so that forage fish are available in the proper size and quantity to meet their needs. Since all the pike do not grow at the same rate, several carp size classes must be on hand at the same time to meet demand for different sizes of minnows.

Goldfish and fathead minnows are also used as food for the growing muskies and northern pike. The goldfish are spawned on Spanish moss mats much the same as carp, except that the mats are placed just under the surface rather than on the bottom. The fathead minnows are allowed to spawn naturally in a pond and the fry are seined for forage.

The young fish are voracious feeders and if not kept supplied with food, they quickly starve or resort to cannibalism. They must be constantly sorted into groups of similar size, lest the larger ones begin feeding on their smaller brothers and sisters.



Goldfish are induced to spawn on specially constructed Spanish moss mats, and the eggs are subsequently hatched and the developing minnows fed to the hungry pike.

Many problems remain to be solved not only in the culture of muskies and northern pike, but in proper stocking to get optimum results from the fish produced. Which waters are most suitable for muskies and which are most suitable for northern pike? Are the two species compatible in the same body of water? What is the most efficient size to stock to insure adequate survival yet keep costs to a minimum? What size lake is most desirable for each species? These and many more questions are now under close scrutiny as the pike program gets underway in Virginia.

The naturally adhesive goldfish and carp eggs stick to the Spanish moss on special spawning mats, making them easy to transfer to hatching ponds.



Carp spawn on the bottom so egg-collecting mats are encased in wire and placed on the bottom of the spawning pond.

MUSKIE STOCKING SUMMARY

In addition to the large scale stocking efforts on Smith Mountain and Gaston Reservoirs, small quantities of larger fingerling muskellunge have been released in the following waters:

Leesville Reservoir
Shenandoah River
Lake Nelson
Claytor Lake
Big Reed Island
Creek
South Fork Holston
River

Lake Shenandoah
Lake Brittle
Lake Maury
James River
(above Richmond)
Wolf Creek
Burke Lake

Chickahominy Lake (northern pike)



Carp that have been held under conditions which inhibit spawning are given an injection of pituitary extract, which usually brings on spawning within a few hours. Controlling the spawning period so that it corresponds with the pike's demand for food is a key factor in having the right amount of food at the right time.

Ready to spawn, a carp is placed in the spawning pond with the mats on which the eggs will be collected. The adult carp are seined on the Commission's Hog Island Waterfowl Refuge since this is more economical than overwintering them at the hatchery.



Little Things Count Big in Boating

(Continued from page 7)

deck with patented Wellnuts, rubber plugs incorporating a threaded part. These expand as a bolt is drawn up in them in much the same manner as the expanding Thermos bottle plugs. These fasteners have high holding power and maintain the watertight integrity of a false bottom.

Continued sloshing of fuel in tanks, as well as the filling of fuel tanks at dockside, generates static electricity. If not drained off, static can spark and ignite fuel fumes to cause explosion and fire aboard. The simple remedy is to "ground" all parts of the fuel system to the water. In a metal-hulled boat grounding to the hull is all that is needed. In wood and fiber-glass hulls grounding can be accomplished by the use of a grounding button of sintered bronze material which takes up little space but provides a safe, efficient discharge of static buildups.

Inboard engine installations should be equipped with blower ventilators to purge the engine compartment of all fuel vapor before starting. Where a blower is not installed, the engine hatch should be raised to allow complete ventilation of the compartment while cranking takes place.

All fuel tank compartments should be adequately ventilated. Clamshell ventilation scoops installed in such compartments should be installed to provide forced draft ventilation while underway. Turning one ventilator forward and one aft will provide such a draft. The exhaust side of the system should be fitted with a large hose which extends to the floor of the bilge so that the heavier-than-air fuel vapors will be picked up by the airflow. Hollow flotation chambers and false bottoms should be periodically tested under air pressure to make sure they are air and vapor tight. Fuel vapor settling into such a compartment can explode spontaneously or by static with sufficient force to rip the hull apart. Grounding of the tanks in a wood or fiber-glass hull will not provide a static path from such false bottoms. The answer here is to keep vapor out by avoiding spilled fuel.

Always carry a tool kit aboard and learn how to make minor repairs afloat. Your dealer can show you how to change a propeller, replace a sheer pin, or change a spark plug. A spare propeller is a must for any boater. For engines which use sheerpins in their drive units, Michigan Wheel Company makes a slip-clutch propeller that will save both broken pins and shattered tempers. Frequently the boater will find it advantageous to buy a spare propeller of a different pitch from that one in regular use. This may be a "speed wheel" for fast traveling with light loads or a "load prop" for use with heavier-than-normal loads or when towing several skiers. When a motor is factory equipped with a cheap aluminum prop, many owners prefer to replace it with one of repairable bronze. The bronze prop will pay for itself many times over when boating in snag-filled or rocky waters which may damage props several times each season. Aluminum propellers lend themselves to only very minor repairs while bronze ones may be reworked many times.

Spare spark plugs, fuses for light circuits and spare lamps should, of course, be carried in the tool kit or elsewhere aboard.

I carry a set of emergency battery cables, purchasable at any auto supply store. They have helped prevent a funless boating day when the battery has been run down through heavy use of accessories or when switches have been accidentally left on. Moreover, the cables have often helped to get other boaters underway when stubborn engines have

refused to crank and the owner has run down a battery in midwater.

For last-resort use all boatmen should carry some sort of distress signals. Special, yellow smoke signals are available for daytime use. Red flares for nighttime use are particularly valuable and may be ordinary truck emergency flares or railroad type fusees. A handy, low cost aerial flare launcher, called the Mayday, is now being marketed. About the size of a fountain pen, the unit lofts a red, green or brilliant white flare some 500 feet into the air: a signal visible for many miles. The small size of this unit makes it valuable for hunters as well as boatmen.

New to our signal kit this season is a pair of red, fluorescent, plastic gloves. These are attention-getters at any time assistance is needed and do double duty as work gloves for handling anchor ropes or when fishing.

The problem of a place for everything and everything in its place has been answered for us by the use of plastic dish-pans and other such plastic containers. In our present boat the space under the lounge seats is exactly right to hold three of these pans on each side of the boat without allowing them to reach all the way to the floor. Thus spare ropes, tools, propeller, first-aid kit, raingear and other less frequently used items can be safely stowed out of sight and out of the way. A couple more of these pans fit under the stern quarter seats for use as catchalls for clothing and personal belongings of passengers.

A neat, concealed, accessory glove compartment is hinged under the dash. In this goes money, watches, jewelry, cigarettes, boat registration card and other items often wanted quickly but which need to be stowed safely.

There is not one of the equipment items mentioned that we feel we can do without during an outing or a vacation on the water and, while our boat is small, it is uncluttered with gear that lies "all over the place." In fact many fellow boaters refuse to believe we have that much gear aboard. It's there and there is a good reason, we feel, for every bit of it.

There is one other item I should mention. As a member of the Coast Guard Auxiliary, part of my boating time is spent in offering Courtesy Examinations to other boaters. My boat, like the facilities of other Auxiliary members, must be properly equipped to Auxiliary standards and we must carry aboard the examination forms, manuals and examination seals that are affixed to boats which pass the Courtesy Examination. For these papers a surplus aircraft data kit was bought at the cost of a quarter. Fastened to the cockpit liner the case holds all the needed papers and decals, yet is neat and out of the way. Flag me down sometime on Claytor Lake, and I'll be more than happy to examine your boat. I'll also try to add to your own boating fun and safety by suggesting that you, too, join the Coast Guard Auxiliary.

Meanwhile, give a little thought to the little things that can make a boat a happy ship. It's the little things that count.

* * * * *

NOTE—The author would like to acknowledge with appreciation the following manufacturers and organizations who assisted with the research for this article: E. I. duPont de Nemours Company, Samson Cordage Works, Genrus Engineering Company, Falcon Alarm Company, Demp-Nock Letter Company, Danforth/White, Rubbermaid Company, The Attwood Company, American La France, Tempo Products Company, Mercury Motors and Crestliner.

Bird of the Month:

By DOCTOR J. J. MURRAY
Lexington



Cattle Egret

BIRDS are the least static of all wild creatures. With wings, they can and do move more freely, and at times for various reasons extend their breeding ranges. One of the most spectacular of these extensions is the spread of the cattle egret into new continents. By origin a bird of the open areas of Africa, it has wandered widely. In fact, it is thought to be the only bird in recent history, crossing the Atlantic under its own power, to establish itself as a breeding species in a new continent. It first came to British Guiana about 1930. On March 12, 1952, it was photographed in Florida. It is not unlikely that some of them were seen in Florida in 1948. Later in 1952 two appeared at Cape May, New Jersey, and still later that year one was collected in Massachusetts.

It was first recorded in Virginia in 1953. Those who are interested may consult a fine study of this species in the United States by Jacob M. Valentine, formerly of the Chincoteague Refuge, in *The Raven* for August, 1958. The first nest in this country was found at Lake Okeechobee, Florida, in 1953. It has now spread inland in Virginia as a post-breeding wanderer and may soon be seen almost anywhere in the state. The first birds to be found across the Blue Ridge were observed at Cross Keys, Rockingham County, in 1962. Its spread along the eastern coast has been almost explosive.

This bird is different in habits from our native herons. It feeds in pastures, following the cattle, and on Chincoteague Island the famous ponies, picking up the insects they have disturbed in the grass. Because of this their habits are beneficial to man's interests. And because of this specialized feeding behavior it meets little competition and so spreads easily and multiplies rapidly.

The cattle egret is attractive in appearance. White like the snowy egret and about the same size, it is quite different from that bird. The bill is yellow, the legs yellow to dull reddish in summer and duskier in winter, and there is a rich yellowish shade to the white on the head and back in summer. Its thicker neck makes it appear clumsier than the snowy egret.

The nest, which I have not seen, is said to be much like those of other small herons. In the Mill Island rookery in Maryland, just across the line from Virginia, they nest in clumps of small cedars in the marsh. Several other varieties of herons nest there with them.

The eggs are pale bluish, almost white. The normal clutch seems to be three or four eggs, though some have five. They take 26 days or sometimes less to hatch. After about three weeks the young leave the nest but remain near it for several more weeks.



Edited by HARRY GILLAM

Redeye Pair



A pair of rock bass, one weighing 1 pound 4 ounces and the other 1 pound 2 ounces, are proudly displayed by S. Lane Craig of Roanoke who took the scrappy little trophies from Carvin's Cove Reservoir near Roanoke. Normally a bluegill-sized fish, the rock bass seldom gets this large.

\$96,000 Recreation Plan Coming

Virginia has received \$48,000 from the Bureau of Outdoor Recreation under the Land and Water Conservation Fund Act as the Federal Government's share in financing a \$96,000 recreation master plan for the state. States must complete and file an acceptable state-wide development plan before they become eligible for land acquisition and development grants.

Congress appropriated more than \$10 million as the states' share from the fund for the 1965 fiscal year, most of which should go for planning. An additional \$84,377,000 was appropriated for use by the states in the fiscal year of 1966.

Virginia's Outdoor Recreation Program is being coordinated by the Department of Conservation and Economic Development. Federal matching funds covering 50% of the cost of approved projects come from sales of the new \$7 Recreation/Conservation sticker and other federal recreation fees, net proceeds from the sale of surplus federal real property, and the federal motorboat fuels tax.

Quarter Million in Federal Aid for Virginia

Virginia has been granted an initial appropriation of \$257,130.35 in Pittman-Robertson, Dingell-Johnson federal aid funds for Fish and Wildlife Restoration during the current fiscal year. A supplemental appropriation will be made in the fall after accounting is complete. Virginia's preliminary share was up some 15% over that of last year because of an \$800,000 overall increase in funds for distribution to the 50 states.

Of the initial Virginia appropriation, \$41,384.25 is earmarked for fisheries projects and \$215,746.10 is allocated for game projects. These funds are used to finance up to 75% of the cost of approved fish and wildlife research and restoration projects. The federal money comes from a manufacturers' excise tax on certain hunting and fishing equipment and is distributed to the states on a basis of land area and the number of paid license holders. These taxes were not affected by the recent excise tax cuts approved by Congress.

Harnsberger Named National IWLA President

Reynolds T. Harnsberger of Markham, Virginia, was elected National President of the Izaak Walton League of America at that group's recent convention in Cody, Wyoming. Long a hard-working conservationist and Wal-tonian, Harnsberger has served as Chairman of the National IWLA Executive Board, National Director, State IWLA President, Arlington-Fairfax IWLA Chapter President and Fauquier IWLA Chapter Vice-President. He is one of the founders of the Arlington-Fairfax Chapter, one of the most active in the state.

Game Law Folder Has New Format

The "Summary of Virginia Game Laws," distributed each year by the Commission of Game and Inland Fisheries, has a new look this year. The informational piece has been expanded

to a 24-page, pocket-sized booklet and incorporates additional hunting season maps and copy.

In addition to the season maps incorporated last year, the publication includes maps on raccoon and fox seasons and bag limits. Also included are more local regulations on carrying firearms on, or hunting near, public roads. The expanded format makes the booklet easier to read.

The 24 page booklet has been distributed to clerks, license agents and sporting goods dealers throughout the state and should be available from these sources. Single copies may be obtained from the Game Commission office, Box 1642, Richmond, Virginia 23213.

New Bream Record



This 2 pound 5 ounce bluegill sets a new Virginia Trophy Fish record for this species, acing out the previous king by a scant 2 1/2 ounces. The lucky angler is David A. Fleming of Richmond who landed the lunker bream in a Brunswick County pond.

Northern Pike Stocked In Occoquan

About 400 five-inch northern pike from the Game Commission's King and Queen Fish Cultural Station were stocked in Occoquan Reservoir during late June, according to Fish Division Chief R. G. Martin. "With good growth, the young pike might reach the 26-inch minimum size by the fall of 1966," Martin said. Anglers are asked to use care in releasing any of these fish under the 26-inch limit and to report any catches to the Game Commission.



Edited by DOROTHY ALLEN

Very Good Luck



Richmond News Leader photo by Gormus
Wayne Sears and Jimmy Allen with their string of hickory shad caught from the James River, Richmond.

Hunter Safety Course



Highland Recorder photo, Monterey
Twenty-two youngsters completed the Hunter Safety course sponsored by the Highland Boy Scouts of America Troop 88. Wardens James L. Ogden and Don Miller, extreme left in the picture, were the instructors. From left to right the youngsters are Kerry Sponaugle, Jackie Graham, David Graham, Stephen Galford, Delmar Vandevander, Blair Sullenberger, Jimmy Wills, J. B. Hull, Jerry Warner, Michael Hammer, Patrick Lowry, Wayne Huffman and Ben Stephenson. Not present when the picture was taken were Richard Waybright, Gary Hull, Dale Hammer and Donald Hull.

FFA'ers Receive Seed



F. F. A. boys of Riverheads High School receive their annual game bird seed mixture from Augusta County Game Warden H. I. Todd. Pictured (left to right): Aubrey Bartley, Jimmy Painter, Ronnie Hanger, Larry Rowe, Stephen Carter, Warden Todd, Daniel Carter and Claude Smith.

A 1990 Warden



"Cholly" Ogden, 13 month-old son of Warden Jim Ogden of Highland County, wants to follow in his Daddy's footsteps.

First Big Fish



Barbara Brown of Front Royal admires her brother's first "big" fish. Bruce caught his 9¾ lb., 33 inch carp on a spinning rod when he was fishing in the North Branch of the Shenandoah River.

Bear Trade

Bath County Warden Donald R. Miller took along a bear when he visited Warm Springs and Ashwood Schools. He said he enjoyed the expressions and questions as much as the children enjoyed having the cub attend their classes. Warden Miller relates the following incident:

"As I was leaving the Ashwood School a little girl came up to me and asked if I would trade the bear for her baby brother. I told her she would not really want to trade her little brother for a bear and she replied in all seriousness, 'You wanna bet?'"



Martinsville Bulletin photo
Henry County Game Warden Edgar Lemons presents checks and certificates to two winners in the state-wide Wildlife Essay Contest. Dru Rothrock, left, received a five-dollar award. Kathy Marsh, right, won a second place twenty-five dollar award. Both winners are sixth-grade students at Patrick Henry Elementary School in Martinsville.



Covington Virginian photo
Game Warden Forest Hanks and Paul Siple of the Alleghany Chapter, Izaak Walton League, present checks and certificates to Kevin Fitzgerald and Donna Ayers for honors they won in the 18th Annual Wildlife Essay Contest sponsored by the League and the Game Commission. Looking on is Lynn Graham, principal of the Callaghan Elementary School, where both winners are fifth graders.

ON THE WATERFRONT



Edited by JIM KERRICK

Lubber or Salt

Test your nautical knowledge before going out with your boat by taking the following quiz on a few boating basics. Circle the answers you think are correct, then check your score to see how you rank.

If you get all ten correct, you're a real "salt." A score of 8 or 9 indicates you're a seasoned skipper. Get 5-7 right and you're still a first mate. Less than 5 right and you'd better be content as a passenger until you pick up more boating know-how.

Okay, here you go . . . and no peeking at the answers!

1. If you are driving a powerboat and meet another powerboat coming directly toward you, you should (a) turn to the right, (b) turn to the left, or (c) wait until the other boat makes a move and change your course accordingly.

2. The best way to approach a dock is (a) with the wind, (b) against the wind, or (c) broadside to the wind.

3. When leaving a dock, the best procedure to follow is (a) untie lines, push boat from dock and then start engine; (b) untie lines and hold on to dock while the engine is started; or (c) start engine first, then release lines.

4. A nautical mile is (a) longer, (b) shorter, or (c) the same as a statute mile.

5. When anchoring a boat in a strong wind, (a) a longer anchor line will hold the boat better, (b) a shorter line will be more effective, or (c) as long as the anchor reaches the bottom length of line doesn't make any difference—it's the size of the anchor that counts.

6. Coming into a harbor or river from open water, the right side of the channel is marked with (a) black buoys, (b) red buoys, or (c) black and white striped buoys.

7. When running into high waves, meet them (a) head-on, (b) at a slight angle away from head-on, or (c) at a severe angle from head-on, almost broadside.

8. The deepest water on the bend of a river usually can be found (a) toward the inside of the bend, (b) in the center of the river, or (c) toward the outside of the bend.

9. The best propeller for the engine on a large, heavy craft generally would be one with (a) high pitch, (b) low pitch, or (c) small diameter, since pitch would have little effect.

10. When you see a square red flag with a white diagonal stripe flying from the staff of an anchored boat or on a staff attached to a float, this indicates (a) a commercial fisherman has his nets set in the area, (b) you've cruised into the slalom course of a water ski tournament, or (c) skin divers are in the area.

ANSWERS: 1-a, 2-b, 3-c, 4-a, 5-a, 6-b, 7-b, 8-c, 9-b, 10-c.

Outboard Thefts Hit Million Dollar Mark

Carelessness cost the outboard boatman \$1,000,000 last year. That's the price tag for engine thefts in 1964 based on a recent survey conducted by Evinrude Motors.

The problem of stolen engines has grown steadily in recent years, and the problem is probably worse than the survey shows as many thefts more than likely are never reported.

Portability is one big reason why thousands of boatmen prefer small horsepower motors. Apparently this feature attracts the thief as well. Better than one third of the thefts involved motors of less than 10 horsepower. This should be a warning to the fisherman who has the habit of leaving his rig unattended.

Weight is no deterrent as 60 outboards in the 60, 75 and 90 horsepower ranges were lifted by light-fingered but strong-backed thieves.

One of the prime reasons for this rising crime rate is CARELESSNESS. Outboard owners don't take the same precautions with their rigs as they do with their automobiles. Many boatmen think nothing of leaving their boats in an isolated area secured by a single moor-

ing line or parked aboard their trailers ready to go.

If your motor is stolen it is probably gone for good. The recovery rate is less than one percent and is one good argument for adequate insurance coverage. Many outboarders don't take the time to register their equipment and many can't identify their motors if they are located.

The low recovery rate also indicates that there is a market for the "hot" motor, and we are not talking about speed. There is a double danger involved for the customer looking for this "quick deal." If the motor is located, the insurance company has a legal right to take the motor; this leaves the customer without the motor or the money he paid for it. To protect against theft:

1. Record all serial numbers of the boat and motor and register them with the manufacturer. Keep a copy for yourself.

2. Use a chain and lock to secure your motor to the boat.

3. When trailering your boat, don't leave it unattended. At night, wrap the trailer safety chain around a tree or post and secure it with a lock. Don't think that your rig is safe parked in your garage. Thieves have been known to pull right into a driveway, hook up, and drive away.

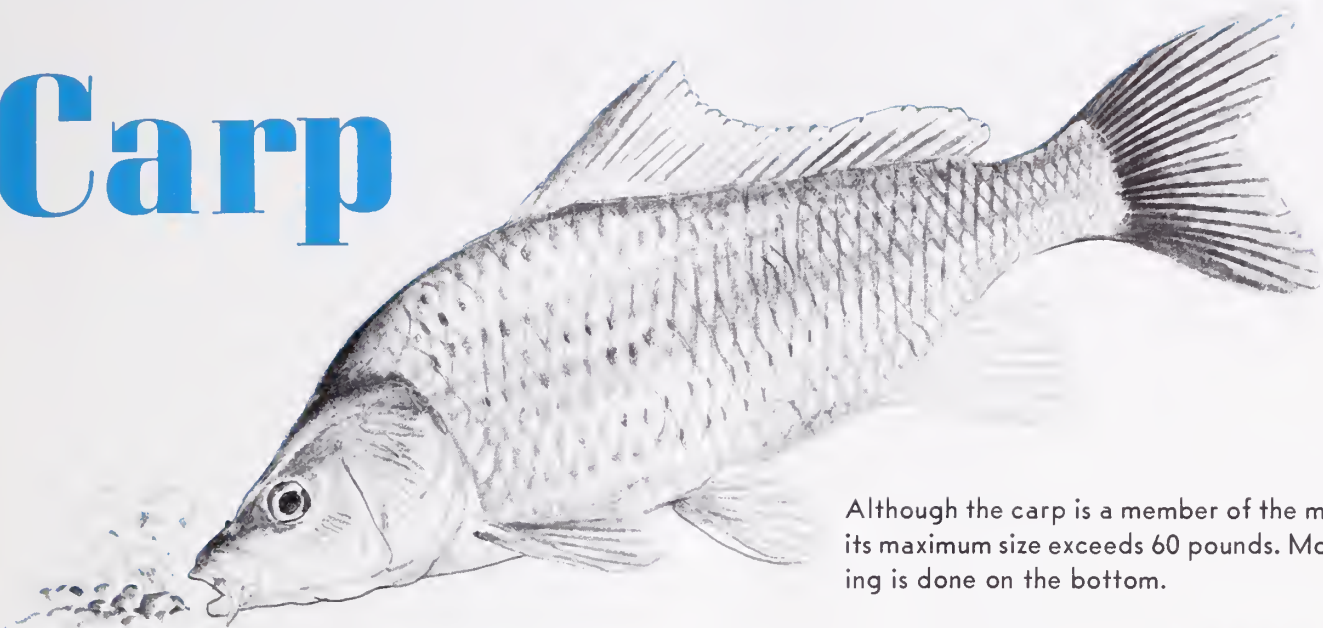
4. If your motor has an electric starter, never leave the key in the ignition. Protect manual starting motors by removing the spark plug.

5. Report all thefts immediately to local authorities, your marine dealer, and the manufacturer.

Photo courtesy Evinrude Motors



Carp



Although the carp is a member of the minnow family, its maximum size exceeds 60 pounds. Most of its feeding is done on the bottom.

Favorite carp baits often include these:



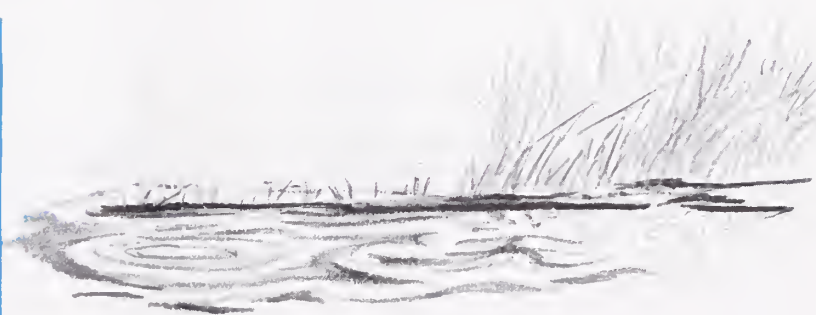
Doughball



Sweet corn



Earthworms

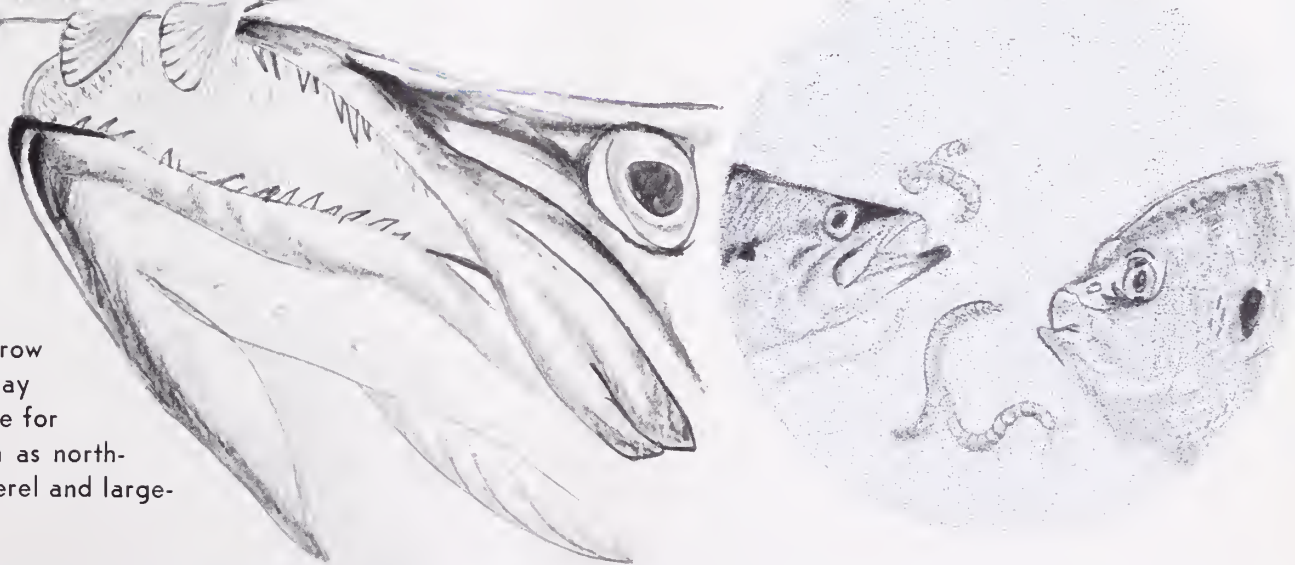


Spawning takes place in shallow water, usually near vegetation, during May or June.

Carp may compete with young gamefish for food.



Young carp grow rapidly but may provide forage for gamefish such as northern pike, pickerel and large-mouth bass.



Information, please!

SUMMARY of VIRGINIA GAME LAWS

196

A license take a

Landowners tenants who r permission of licenses to hunt County residen license to hun residence. Lic or corporation are (1) perso county, or sta preceding the who have bee least two mont be furnished members of th Virginia, stud and unnatur who have resi prior to makin resident licens When authori reservation, a duty may purd that reservatio All persons Permit to hunt

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VIRGINIA PUBLIC HUNTING AREAS

The Virginia Commission of Game and Inland Fisheries, in cooperation with State, federal and private agencies, manages 1,866,346 acres of public hunting lands for the benefit of Vir for each lice opportunities grouse, quail stretch from regions.

There is no listed in th required whe Forest Stamp These stamp Money receiv wildlife habi

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VIRGINIA PUBLIC CAMPSITES

Overnight camping is permitted on those wildlife management areas owned or controlled by the Commission of Game and Inland Fisheries which are listed below. These facilities are developed for fish portions of the hunti 1,100 developed pu recreation areas th others who prefer su they are very briefly 8. Further informati

Division of Parks 7th & Main, Richm George Washington Federal Building, H Jefferson National Carlton Terrace Bu Shenandoah Nation Blue Ridge Parkwa John H. Kerr Dam Route No. 1, Box 7 Reservoir Manager, Route No. 2, Box 1 Prince William Fore Information on mo obtained from the Vi St., Richmond, Va. 23

Depart

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Overnight shelter at lean-tos—which place and latrine. D the portion of the the booklet, "Lean palachian Trail Club ington 6, D. C. In Gap is also obtaina structures are loca the George Washing on private land. Th approached by way

SUMMARY OF VIRGINIA FISH LAWS 1965 SEASON

A fishin attempt

Persons n residents un over; (2) loc and tenants ten permissio erty only; or ponds indivi licenses are city, county, preceding th who have b least two m to be furnis members of Virginia, stud and unnatu who have r prior to mo resident lice When outth reservatio, d duty may pu vation only. All persons when fishing net permit w

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PUBLIC FISHING WATERS OF VIRGINIA

GAME COMMISSION LAKES

Fishing hours are one hour before sunrise to one hour after sunset; gasoline motors, gigging, seining of minnows, and shooting over ponds are prohibited; overnight camping is not permitted. There is no charge for fishing.

Seasons, size limits, and creel limits will be as posted at each pond if different from the general state regulations.

Airfield Lake—Sussex County. At Wakefield. South on No. 628 to pond. 200 acres. Boats available.

Brunswick County Lake—Brunswick County. East of Lawrenceville on No. 58 to Edgerton; northeast on No. 638 to Reedy Creek. 150 acres.

Game Refuge Lake—Sussex County. 4.5 miles south of Disputanta on No. 460, turn west on No. 602 for 5.3 miles, turn south on Forest Fire Trail #452 for one mile, then right on road to pond. 40 acres.

Lake Brittle—Fauquier County. East of Warrenton. Turn east at New Baltimore on No. 600 to No. 793. East on No. 793 to lake. 77 acres. Boats available.

Lake Burton—Pittsylvania County. Approximately B miles west of Greta on No. 799 and left on No. 800. 76 acres located on Tommahawk Creek.

Lake Conner—Halifax County. Approximately B miles north of Clover on No. 746 and west on No. 603. 111 acres on Hunting Creek. Boats available.

Fluvanna Ruritan Lake—Fluvanna County. Turn N.W. at Palmyra on to No. 53 to Cunningham, then left on No. 619 to pond, 70 acres.

Lake Gordon—Mecklenburg County. Approximately 4.3 miles south of South Hill on No. 1 and 58 and west on No. 664 to 799 to lake. 157 acres on Miles Creek.

Lake Shenandoah—Rockingham County. On Congers Creek approximately 3 miles east from Harrisonburg on No. 33 to sign to Massanetta Springs. Approximately 2 miles south of Highway No. 33. 39 acres. Boats available.

Lake Nelson—Nelson County. East of Arrington and north of No. 655. 45 acres. Boats available.

Powhatan Lake—Powhatan County. Turn north on No. 684 4 miles west of Powhatan C.H., continue on 3 miles to No. 625, turn west to lake. 66 acres.

Scott-Wise Lake—Scott County. On Little Stony Creek approximately 7 miles south of Coeburn. 68 acres. Boats available.

Lake Burke—Fairfax County. Between Fairfax and Occoquan east of Route 123, about 1 mile southeast of its junction with Route 645, 21B acres, boats available.

ASK YOUR HUNTING AND
FISHING LICENSE AGENT FOR
COPIES OF THESE FREE
INFORMATION DIGESTS

Where shall
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How can
my game